

STRATEGY 7: PROTECTING TRUST WATER AND EVALUATING SUCCESS

Since millions of dollars of state and federal funds are expected to be spent on water rights acquisitions, there is a need to become more sophisticated and knowledgeable about the effectiveness of water rights acquisitions as well as public acceptance and participation in the program. Lawmakers, participants and the general public need to be confident that their water acquisition investments ultimately help fish populations by putting water back in areas where it is needed most. Also the amount of protection afforded a trust water right is a key concern for any entity interested in acquiring water rights for instream flows.

It is therefore necessary to have a well-defined compliance and monitoring program in place to ensure protection of trust water rights acquired for instream flows and evaluation and improvement of water acquisition activities over time.

I. Monitoring for program success

Monitoring and evaluation is a vital component of the strategy, it must focus on the efficacy of the acquisition program and whenever possible establish links between the amount of water acquired and the fish populations responses. Monitoring helps improve decision making by providing the ability to track progress and financial accountability.

The necessity for monitoring has been endorsed by the state Legislature, the Governor's Salmon Recovery Strategy, Salmon Recovery Funding Board and NMFS biological Opinion for the Columbia River Basin. A comprehensive statewide strategy is underdevelopment for monitoring watershed health, with a focus on salmon recovery.

1. Types of monitoring

There are different kinds of monitoring:

- **Status and trend monitoring** to determine habitat and ecological conditions in the stream and how those conditions are changing.
- **Implementation monitoring** to confirm that management decisions were implemented.
- **Effectiveness monitoring** to accurately assess whether strategy objectives are being achieved.
- **Compliance monitoring** to assure that measured flows are consistent with legally-established instream flow requirements or other performance targets.
- **Validation monitoring** to confirm that actions have the desired results and that salmon are responding to the measures taken.
- **Public perception monitoring** to evaluate the social acceptance of the program.

As work continues on development of specific watershed monitoring programs, there is a need to begin the design of the implementation, effectiveness and compliance components of a water acquisition monitoring program. While the validation monitoring is very important, it is complex, expensive, and will require more time and money to implement. Validation monitoring

is outside the scope of this strategy at this time, as it may take years, or perhaps decades for results of restoration activities to be realized.

2. Designing a monitoring program

A working assumption of the Washington Water Acquisition Program is ‘putting water back into stream and tributaries will result in habitat improvements’. On-going monitoring and evaluation is necessary to validate this assumption and to better understand the connection between water rights acquisitions and habitat improvements. A monitoring program will be designed to:

- **Set up performance targets as measurable criteria** to determine whether or not acquisition action achieves desired outcome. The desired outcomes will be characterized in a variety of ways – a desired trend, conditions at a site deemed appropriate for a species of interest, and an established target.
- **Define and measure indicators of habitat conditions and ecological health.** The types of indicators that will be measured include stream flows, temperature and biological integrity. The frequency, spatial and temporal scales that these indicators need to be measured will also be determined.
- **Set up a quality assurance plan prior to measuring indicators.** The quality assurance plan will include data quality objectives, protocols for data collection, quality control procedures, data management procedures, and data evaluation and reporting products.
- **Specify funding needed to conduct** necessary monitoring and evaluation.
- **Identify participants to conduct the required activities.** The use of volunteer help will be evaluated.

Monitoring results will be tracked and reported by basin and stream reaches and data will be shared with the Legislature, participating water-right holders, local partners, federal agencies and the general public.

Monitoring and evaluation program will not be limited to physical and biological indicators. The program will also define specific activities to:

- Evaluate social/public acceptance of the program.
- Evaluate effectiveness of various acquisition tools.
- Set up a financial accountability system.

3. Performance indicators

Indicators are expected to provide meaningful information relevant to the objective of acquiring and protect a sufficient amount of water to meet stream flows for all life stages of salmonids within critical basins. The Joint Natural Resources Cabinet (JNRC) developed several salmon scorecard indicators to track and report on the effectiveness of state agencies actions and progress toward salmon recovery. The following indicators proposed by JNRC and Ecology are pertinent to the water acquisition program:

- **Volume of water restored to salmon streams** where water availability and flows are limiting factor. The table below illustrates the volume of water acquired in fiscal Year 2002, in several critical basins.
- **Number of days per year when instream flow** targets are met.

- **Number of days per year when temperature targets** are met (temperatures not limiting to salmon productivity).

4. Baseline data and information

It is paramount that flow discharge measurement be as accurate as possible to effectively assess flow improvements. Ecology field staff already operates a statewide stream gauging network. This network provides timely and accurate instantaneous stream flow data at various rivers, streams, and stream reaches. These instantaneous stream flows are a key element in determining the water available for instream and out-of-stream uses.

Various flow techniques are used to develop rating curves to relate river stage to discharge for each measurement site. Ecology also utilizes information from stream gauges operated by other governmental agencies (U.S. Geological Survey, Army Corps of Engineers and Bureau of Reclamation, etc.).

The stream flow network is being expanded in most of the 16 critical basins. There is increased need for accurate and timely stream flow data to assist in the recovery of salmon, including those protected under the federal Endangered Species Act and ensure efficient water resource management. More than \$3 million in state and federal funds are available to:

- Purchase and install stream gauges
- Operate and maintain the gauges
- Provide financial support to local partners
- Collect and report stream flow and temperature data

Several high and medium priority rivers and tributaries in 10 the 16 critical basins have been identified as needing additional gauging:

- **Nooksack** watershed (Water Resource Inventory Area 1)
- **Quilcene/Snow** watershed (Water Resource Inventory Area 17)
- **Elwha-Dungeness** watershed (Water Resource Inventory Area 18)
- **Walla Walla** watershed (Water Resource Inventory Area 32)
- **Middle Snake** watershed (Water Resource Inventory Area 35)
- **Lower Yakima** watershed (Water Resource Inventory Area 37)
- **Naches** watershed (Water Resource Inventory Area 38)
- **Upper Yakima** watershed (Water Resource Inventory Area 39)
- **Wenatchee** watershed (Water Resource Inventory Area 45)
- **Okanogan** watershed (Water Resource Inventory Area 49)

The remaining six basins either have adequate existing network within the basin (Methow and Snohomish) or the adequacy of existing network has not been determined.

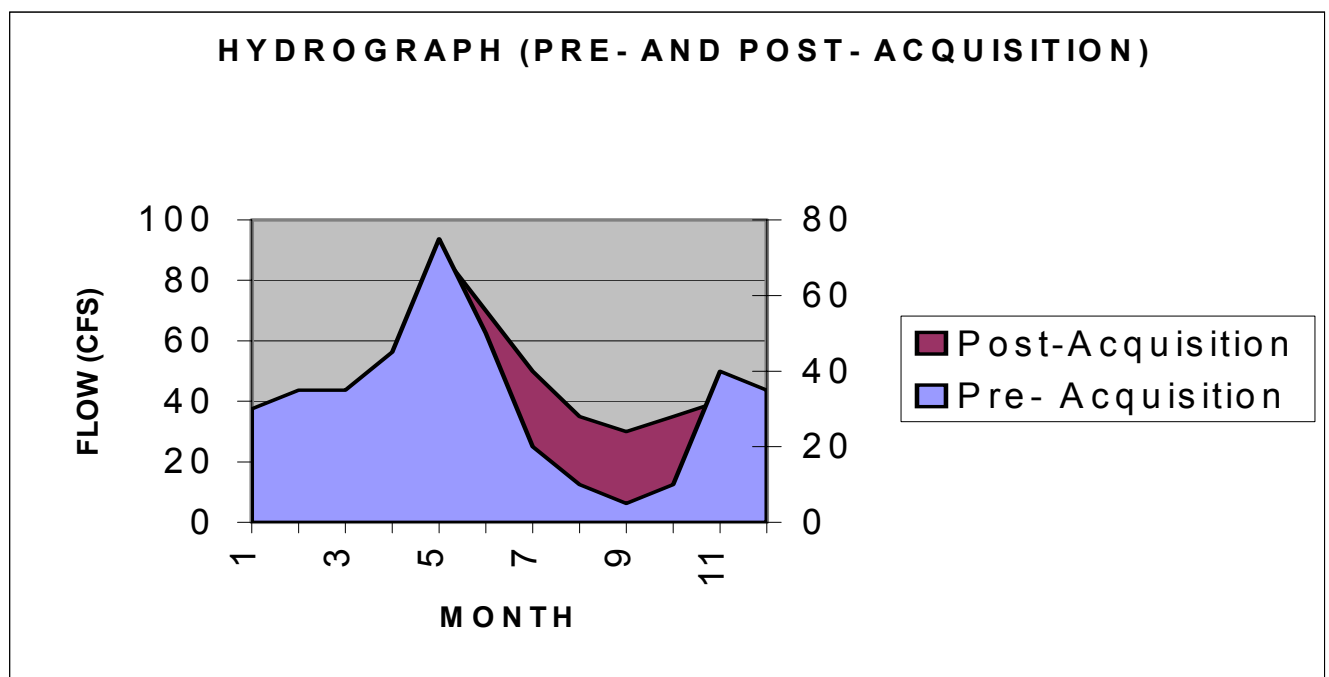
Currently, 10 of the 16 critical basins have a standardized system of continuous, real-time stream gauges and permanent staff gauges. These gauges, most installed in 2002, will provide accurate, documented, and easily accessible data. The stream flow data is being collected consistent with protocols established by the departments of Fish and Wildlife and Ecology, and outlined in the following web site: <http://www.wa.gov/wdfw/hab/sshiap/dataptcl.htm>.

The data will be incorporated into the SASSI program, an information system that characterizes freshwater and estuary habitat conditions and distribution of salmonid stocks in Washington. Stream gauge data will be used to:

- **Improve baseline information** used to determine flow-limiting reaches and tributaries.
- **Better target and prioritize flow acquisition needs** and the assessment of various proposals.
- **Verify the presence of water purchased** to restore flows in priority streams and reaches.
- Provide information on the status and trends of instream flow. This information will be used to compare actual flows to target instream flows, where available to determine acquisition needs.
- **Provide stream temperature data.**
- **Support compliance and enforcement** by providing near real-time data when trust water rights are exercised.
- **Monitor long-term trends** and the effect of factors other than withdrawals on instream flow and temperature.

The hypothetical hydrograph below depicts how acquired water increases flows during the typical low-flow period between June and October.

Table 2: Hydrograph for monitoring pre- and post-acquisition flow conditions



5. Monitoring diversions

The top 80 percent of total water users in each of the 16 critical basins are required to meter their diversions and to record and report specific flow data. By Dec. 31, 2002, about 700 water-right holders in 13 of the 16 basins will be under order to install water-measuring devices and begin reporting their water use to Ecology. The department is also providing grants to assist water-right holders in purchasing, installing and calibrating measuring devices. The 2001 Legislature allocated \$3.4 million in cost-share grants to help water users pay for the meters.

Flow measurements will provide information about the instantaneous and total amount of water diverted from the streams. This is needed to:

- Determine the total amount of water diverted under a water right considered for acquisition.
- Estimate the consumptively used portion of the water right.
- Estimate the return flow portion of a water right by subtracting the consumptively used portion from the total amount of water diverted.
- Estimate the net water saving resulting from efficiency improvement.
- Determine the likelihood of detriment or impairment of existing senior water rights.
- Verify the instream presence of the portion of the water acquired through partial purchase, lease or donation.
- Support compliance and enforcement against unauthorized uses.

6. Monitoring stock status

A comprehensive update and revision of the state's SASSI is underway. The inventory is a standardized, uniform approach to identify and monitor the status of Washington's salmonid stocks. SASSI stock distribution and status will be incorporated into the broader state Salmon and Steelhead Habitat Inventory and Assessment Program. This will link flow conditions and stock distribution with productivity modeling efforts, which can be used as a basis for prioritizing and measuring the effect of water right acquisition efforts on salmonid populations.

In addition, annual spawning survey and adult salmon inventory data collected by state and federal agencies as well as tribal nations can be used to assess salmonid recovery trends in streams where flows are restored. In some instances, additional surveys may be conducted to determine the presence of salmonids in streams and reaches where fish access has been restored through water acquisition.

II. Protection of instream flow trust water rights

Several explicit statutory statements require no impairment or detriment to other water rights at the time of the transfer. The preliminary and final evaluation of the acquired water right, in most cases, includes an impairment analysis. The results of impairment analysis, type of water right, its priority among other water rights on the stream and its location along the stream will be taken into account before approving any transfer to the state trust water program. Once a trust water right is established, the key question is: can it be protected without impairing other existing senior water rights?

As with any water right, the following parameters of the trust water right and the regulated right must be reviewed and understood:

- **Trust water right instantaneous quantity:** What rate will be protected?
- **Trust water right priority:** How does the priority of the trust water right relate to other rights in the subject stream reach?
- **Legal status of the right acquired – claim, state-issued or adjudicated:** Ecology cannot regulate to protect a trust water right that was based on a claim. This is not to say that claim-based trust water rights have no value; only that Ecology cannot regulate in favor of that claim.
- **Trust water right season of use:** For which part of the year is the trust water right valid (seasonal, year-round, etc.)?
- **Provisions/conditions of the regulated right:** Is the regulated right subject to an adopted instream flow? Are there other conditions or provisions regarding the particular right that might determine how it is regulated?
- **Limitations due to natural conditions:** Is the stream intermittent or ephemeral?

Water-right holders with senior rights to the trust water right generally have first call for water. Water rights junior to the trust water right are also of concern since regulation may occur both above and below the original point of diversion for the trust water right.

The actual regulation for a trust water right can be split into two elements:

- Curtailment of upstream diversions to satisfy the trust right at the original point of diversion.
- Regulation of junior water rights to protect the trust right downstream from the original point of diversion.

1. Upstream regulation

Regulation of upstream rights to satisfy a trust water right at the original point of diversion is no different than regulating upstream rights for an off-stream use at the same diversion point. The trust water right will carry a priority date of the original right and if insufficient flow is available to satisfy that right, junior upstream diversions may be curtailed beginning with the most junior, in order to provide sufficient quantity to satisfy the trust water right at the former point of diversion. Ecology cannot regulate claims in favor of a trust water right or regulate other rights in favor of a claim-based trust water right.

If a trust water right is created by severing a portion of the original right, then the trust water right will be considered junior to the remaining portion of the original right, unless some other agreement is reached between the state and the right holder which would specify an alternative arrangement. Therefore, the remaining portion of the original diversionary right needs to be fully satisfied before any water is allocated to the trust water portion of the right.

If instream flow regulation is in place, a trust water right, if senior, will be considered additive to the adopted instream flow. All upstream junior appropriators subject to the instream flow regulation will be regulated to protect the instream flow and the more senior trust water right.

Note: No water right should (and will) be acquired, especially through purchase or lease, if it is subject to regulation to protect minimum flows established by rule.

2. Downstream protection

The protection of a trust water right downstream from the original point of diversion presents a much more challenging task than regulating junior rights above the point of diversion.

Protection of a trust water right is very information intensive; distinctions must be made between existing conditions and the trust water right. Again, rights existing at the time the trust water right is established cannot be impaired. When stream flows drop to level where Ecology must consider attempting to protect a trust water right, the distinction will be made between out-of-stream diversions impacting stream flows below the point of diversion and what is occurring “naturally” within the same stream reach. Some naturally-occurring events which will affect flow include:

- **Gaining/losing reaches:** What are the effects on the stream? What are the boundaries?
- **Transportation loses:** Evaporation, transpiration from riparian vegetation, diurnal fluctuations, etc.
- **Tributary input:** Springs, streams, return flows, etc.

The fact a trust water right generally is a continuous flow water right versus the intermittent nature of an appropriative off-stream use is an additional factor to consider in avoiding impairment while protecting a trust water right. The program must also consider how the trust water right was established relative to the original water right (*e.g., has the season of use been compressed or otherwise altered?*) in considering potential impairment. In any event, in no case should a junior appropriator be regulated for a trust water right if it can be shown that historically, the junior rights were never regulated for the original diversionary right since this would be considered impairment.

If sufficient information necessary to make the distinction between “natural” condition impacts to the stream and pumping diversions is available and understandable, and a determination is made that junior pumping is diminishing a trust water right, that junior right may be regulated in favor of the senior trust water right. In most cases, the farther downstream one attempts to protect a trust water right, the more difficult it will be to determine to what extent a diversionary pump is diminishing a trust water right.